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Drinking Water in Idaho: Meeting the New Federal Arsenic Standard

Concern over the potential effects of long-term, chronic exposure to arsenic in drinking water has prompted the U.S. Environmental Protection Agency (EPA) to reduce the drinking water standard for arsenic from 50 parts per billion (ppb) to 10 ppb, effective January 26, 2006. Arsenic has been reported to cause more than 30 different adverse health effects including cardiovascular disease, diabetes mellitus, skin changes, nervous system damage, and various forms of cancer. The new standard will apply to most public drinking water systems in Idaho.

Background

The original arsenic standard of 50 ppb was established in 1975, based on a 1942 Public Health Service standard. In March 1999, the National Academy of Sciences issued a report concluding that the 1975 standard did not achieve EPA's goal of protecting public health and should be lowered as soon as possible.

In June 2000, EPA proposed lowering the drinking water standard for arsenic to 5 ppb and requested public comment on options of 3 ppb, 10 ppb, and 20 ppb. EPA evaluated over 6,500

pages of comments from 1,100 respondents, settling on a standard of 10 ppb. EPA used its discretionary authority under the 1996 Amendments to the Safe Drinking Water Act to set the standard at a level that "maximizes health risk reduction benefits at a cost that is justified by the benefits."

How does arsenic get into drinking water?

Most arsenic in drinking water comes from natural rock formations. Water that encounters rock formations can dissolve arsenic and carry it into underground aquifers, streams, and rivers that may be used as drinking water supplies. Arsenic deposited on the ground from industrial or agricultural uses tends to remain in the top few feet of soil for a long time and is not likely to have a significant impact on most aquifers. When dissolved in water, arsenic has no smell, taste, or color, even at high concentrations.

What are the health effects of exposure to arsenic?

Arsenic has been reported to cause more than 30 different adverse health effects including cardiovascular disease, diabetes mellitus, skin changes, nervous system damage, and various forms of cancer. *(over)*

What is arsenic?

Arsenic is a naturally occurring element found in the earth's crust that is found most everywhere. It occurs naturally in rocks and soil, water, air, and plants and animals. There are trace amounts of it in all living matter.

Approximately 90% of industrial arsenic in the U.S. is used as a wood preservative. Arsenic is a well-known poison used in the manufacture of agricultural chemicals such as pesticides, weed killers, and rodenticides. It is also used in the production of paints, dyes, metals, drugs, soaps, and semi-conductors.

Arsenic can be released into the environment through natural activities such as volcanic action, erosion of rocks, and forest fires, or through human activities such as pesticide application, improper disposal of arsenic-containing waste chemicals, agricultural applications, mining, and smelting.

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Health Impacts (continued)

Several factors working together will determine how likely it is for harmful health effects to occur. These factors are:

- **Dose** – how much arsenic you have been exposed to;
- **Duration (exposure)** – how long and how often you have been exposed; and
- **General Health, Nutrition, Age and Lifestyle** – some people may be affected by lower levels of arsenic in water than others. Young children, the elderly, people with certain long-term illnesses, people with poor nutrition, and people who smoke may be at greater risk.

EPA's proposed drinking water regulation addresses the long-term, chronic effects of exposure to low concentrations of inorganic arsenic in drinking water. Chronic effects at low concentrations include:

- **Cancer effects:** skin, bladder, lung, and prostate cancer.
- **Non-cancer effects:** skin pigmentation and keratosis (callus-like skin growths seen earliest and most often), gastrointestinal, cardiovascular, hormonal (e.g., diabetes), hematological (e.g., anemia), pulmonary, neurological, immunological, and reproductive/developmental functions.

Short-term exposure to high doses of arsenic (over 100-200 ppb) can cause other adverse health effects, but such effects are unlikely to occur from U.S. public water supplies that are in compliance with the existing arsenic standard of 50 ppb.

Is my health at risk if I drink water with arsenic higher than the new standard?

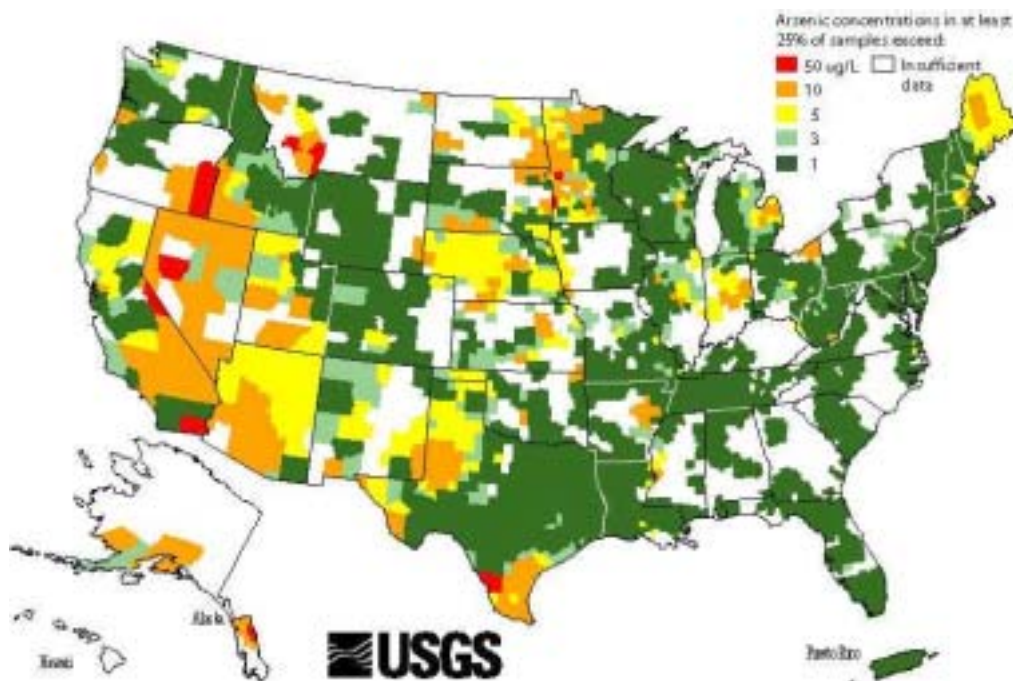
Arsenic in drinking water, soil, air, and food does pose health risks. Although a very high dose (60,000 micrograms) of arsenic can be lethal, the amount of arsenic in drinking water is very small by comparison and any health effects are the result of prolonged exposure over a period of years.

The more you are exposed to arsenic over time, the higher the risk becomes for experiencing health effects. Different people may have different responses to the same exposure to arsenic, so there is no way to know exactly what may happen in any given case. Reducing the amount of arsenic allowed in drinking water will lessen people's exposure and reduce risk of adverse health effects.

For more information on the health impacts of arsenic in drinking water, visit EPA's Web site on "Drinking Water and Health: What you need to know" at www.epa.gov/ogwdw/dwhhealth.html.

Where is arsenic most prevalent in drinking water in the U.S.?

Compared to the rest of the United States, western states have higher arsenic levels (levels greater than 10 ppb). Parts of the Midwest and New England have some areas where arsenic levels are greater than 10 ppb. While many areas may not have detected arsenic in their drinking water above 10 ppb, there may be geographic "hot spots" with higher levels of arsenic than in surrounding areas.



Drinking Water in Idaho: Meeting the New Federal Arsenic Standard

Is arsenic a problem in drinking water in Idaho?

Yes, it is, in some places. Levels are different in different parts of the state. There are 2,067 regulated public drinking water systems serving 1,082,873 people in Idaho. Approximately 95% of the state's drinking water comes from ground water. Surface water, including streams, rivers, reservoirs, and springs, supplies the remaining 5%.

Data compiled by the Idaho Department of Water Resources (IDWR) show that concentrations of arsenic in ground water are highest in the southwestern counties of

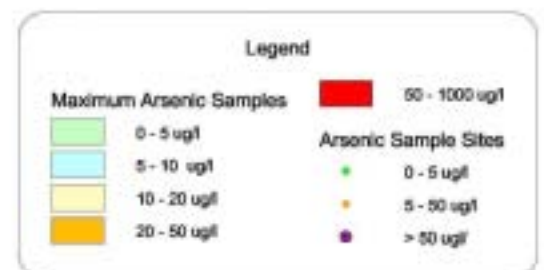
Elmore, Gem, Owyhee, and Washington; in Kootenai County in northern Idaho; and Jefferson County in eastern Idaho. Other counties have moderate or only trace amounts of arsenic in ground water samples.

How do I find out the level of arsenic in my drinking water?

As of July 1, 2002, all community water systems (those that serve at least 15 service connections or 25 people year-round in their primary residences) are required to include health information and arsenic concentrations in their annual drinking water consumer confidence report (CCR) to DEQ for water that exceeds half the new standard (5 ppb). These reports may be disseminated to water system users. If you do not have access to your system's CCR, you may wish to contact them.

If you have a private well, have your well water tested by a certified drinking water laboratory. You will have to inquire whether the lab can test for arsenic.

Arsenic Levels in Idaho



***IDWR's Ground Water Monitoring Network**

How does the new standard affect public drinking water systems in Idaho?

A Public Water System (PWS) is a system for the provision of water to the public for human consumption through pipes or other constructed conveyances, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals at least 60 days out of the year. A public water system can be one of three types:

- **Community Water Systems (CWS)** serve at least 15 service connections or 25 people year round in their primary residences (e.g., most cities and towns, apartments, and mobile home parks with their own water supplies).
- **Non-transient Non-community Water Systems (NTNCWS)** serve at least 25 of the same persons over six months per year (e.g., schools, churches, nursing homes, and factories, and hospitals that have their own water source).
- **Transient Non-community Water Systems (TNCWS)** serve an average of at least 25 persons (but not the same 25) less than six months per year (e.g., campgrounds or highway rest stops that have their own water source).

The new standard will apply to all 750 CWS and to 245 NTNCWS in Idaho. All CWSs and all NTNCWSs that exceed 10 ppb of arsenic will be required to come into compliance by January 23, 2006.

Exemptions (Compliance Deadline Extension)

Water systems that are unable to comply with the deadline may apply for an exemption to seek an additional three to nine years to comply with the new standard, depending on the number of people served by the water system and the arsenic concentration present in the system. Download a fact sheet, application form, and document checklist on DEQ's

Web site at www.deq.state.id.us/water/dw/arsenic.htm. To be considered for an exemption, the application form must be completed and submitted to:

Idaho Department of Environmental Quality
Attn: DW Arsenic Exemption Coordinator
1410 North Hilton
Boise, ID 83706

What is DEQ doing to help public water systems comply with the new arsenic rule?

Complying with the new arsenic rule may be financially difficult for some public water systems, particularly smaller systems with a small customer base. Here's how DEQ is working to help public water systems comply with the rule:

- ✓ In fall 2002, DEQ sponsored a free arsenic sampling event for NTNCWS to help determine the level of arsenic in their systems and potential treatment needed. A total of 101 systems took advantage of this opportunity.
- ✓ Also in 2002, DEQ served as an information resource for public water systems that applied to participate in Round 1 of EPA's Arsenic Treatment Demonstration Project. Round 1 was aimed at demonstrating commercially-ready treatment technologies or engineering solutions for removing or reducing arsenic for small systems. Twelve Idaho systems applied. The city of Fruitland, Idaho, was one of only 18 project sites selected nationally to participate in the project.
- ✓ Under DEQ's drinking water grant and loan program, several municipal water systems applied for and are slated to receive funding to evaluate options for addressing arsenic contamination of drinking water in FY2004.
- ✓ This year, DEQ once again served as a resource for public water systems interested in participating in Round 2 of EPA's Arsenic Treatment Demonstration Project. EPA expects to fund 18-22 projects nationwide for Round 2. Selected sites will benefit by having a technological or engineering solution to arsenic at a substantially lower cost than hiring it out themselves.

- ✓ Lastly, DEQ is working with water systems to facilitate exemptions that will provide qualified systems more time to determine how they will comply with the arsenic rule and fund the necessary treatment of their drinking water supplies.

For More Information

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- > **Web Sites:**
 - **U.S. Geological Survey**
<http://co.water.usgs.gov/trace/arsenic/>
 - **U.S. Environmental Protection Agency**
<http://www.epa.gov/safewater/dwhealth.html> or
<http://www.epa.gov/ogwdw/arsenic.html>
 - **World Health Organization**
<http://www.who.int/inf-fs/en/fact210.html>
 - **Natural Resources Defense Council**
<http://www.nrdc.org/water/drinking/qarsenic.asp>
 - **Environmental Finance Center, BSU**
<http://sspa.boisestate.edu/efc/>